

# SOUTHERN WATERSHEDS COMMON REEDGRASS PROJECT VEGETATION MONITORING PLAN

## INTRODUCTION

The Southern Watersheds Common Reedgrass Project is an interagency effort to increase public awareness of the common reedgrass problem, demonstrate effective control techniques, and encourage preventative measures against reedgrass infestation in the wetlands of southeastern Virginia. Complete project information can be found in the project proposal. The objective of this monitoring is to document changes in populations of common reedgrass and other marsh plant species subjected to a combination of herbicide and fire treatments. The monitoring program is designed to test the following null hypothesis: herbicide treatment followed by burning in a reedgrass infested marsh causes no change in the number of reedgrass shoots, the number of "desirable" emergent shoots, or the vascular plant species richness.

The twenty-one proposed treatment units occur scattered over a large area (645+ square km) and range widely in size from less than 0.5 hectares to more than 16 hectares. Treatment units are often accessible only by boat and/or by wading through large marshes. The harsh environmental conditions and flooded soils in the marsh habitats to be monitored limit the rate of data collection to a level much lower than that which is possible on dry land. Staff time available for data collection is limited to about eight staff days.

In order to quantitatively analyze the effectiveness of the proposed treatments, four representative treatment units along with two control units will be intensively monitored before and after treatments. All other treatment units will be monitored informally via visual assessment and aerial and ground photography.

## METHODS

Stem density data will be collected from plots in representative treatment units to facilitate testing of the hypothesis. Plot-type density method was chosen because it provides quantitative, objective data regarding the plant community composition. This method will also provide frequency data. In order to facilitate speed of data collection, a set of indicator species will be used for density data collection. Suggested indicator species are listed on Table 1. Data collection should be conducted in late summer (August through early September) of each year when the species of primary concern will be at their mature physiological states. Data will be collected in 1993, 1994, and 1995.

The following procedures will be used:

1. Select and delineate four representative treatment units

which will be aerially sprayed with herbicide and burned; select two control units which will have no treatments. These units will be a minimum size of 1 hectare.

2. Select and permanently mark a "starting point" at one edge of each sampling unit. Establish a baseline along an edge of each sampling unit from the starting point. Record bearing of baseline from starting point to facilitate re-establishment of baseline in following years.

3. At randomly determined points along the baseline, run a meter tape perpendicular to the baseline, across the sampling unit. At randomly determined points along the meter tape sample 1X1 m plots. To minimize observer impact to the sampling plots, all plots should be positioned on the same side of the meter tape. The side on which the plots will be sampled should be determined randomly for each line. There should be a minimum of fifty plots in each sampling unit. Figure 1 shows a diagrammatic representation of the sampling system.

4. Within each sampling plot record all vascular plant species present (frequency data) and record the number of stems/shoots emerging from within the plot for the set of suggested indicator species (density data). As an effort to save data collection time, when a species' stem count within a plot reaches 100, researchers will stop counting and simply mark an asterisk for that species in that plot. Additional or different indicator species may be chosen in the field if circumstances warrant a change from the suggested list (Table 1).

5. Statistical analysis of the density data will likely include one-tailed T-tests or, preferably, analysis of variance. Non-parametric tests may be utilized if assumptions of parametric techniques are not met by the data. Frequency data will be examined using descriptive statistics and bar graphs.

Permanent photographic monitoring points will be established for all intensively monitored units. Photographs of the units shall be taken each year during late summer according to the following procedure:

1. Select and permanently mark a subjectively chosen photography point for each unit. The photography point should be positioned such that a representative section of the reedgrass stand appears in the frame.

2. Select and permanently mark a reference point at the edge of the reedgrass stand. A staff indicating heights shall be affixed to the reference point for the photograph. The reference point should be selected such that the indicator staff is clearly visible in the photograph in front of the reedgrass stand.

3. A photograph shall be taken from the photography point towards the reference point. The camera height, lens type, film type,

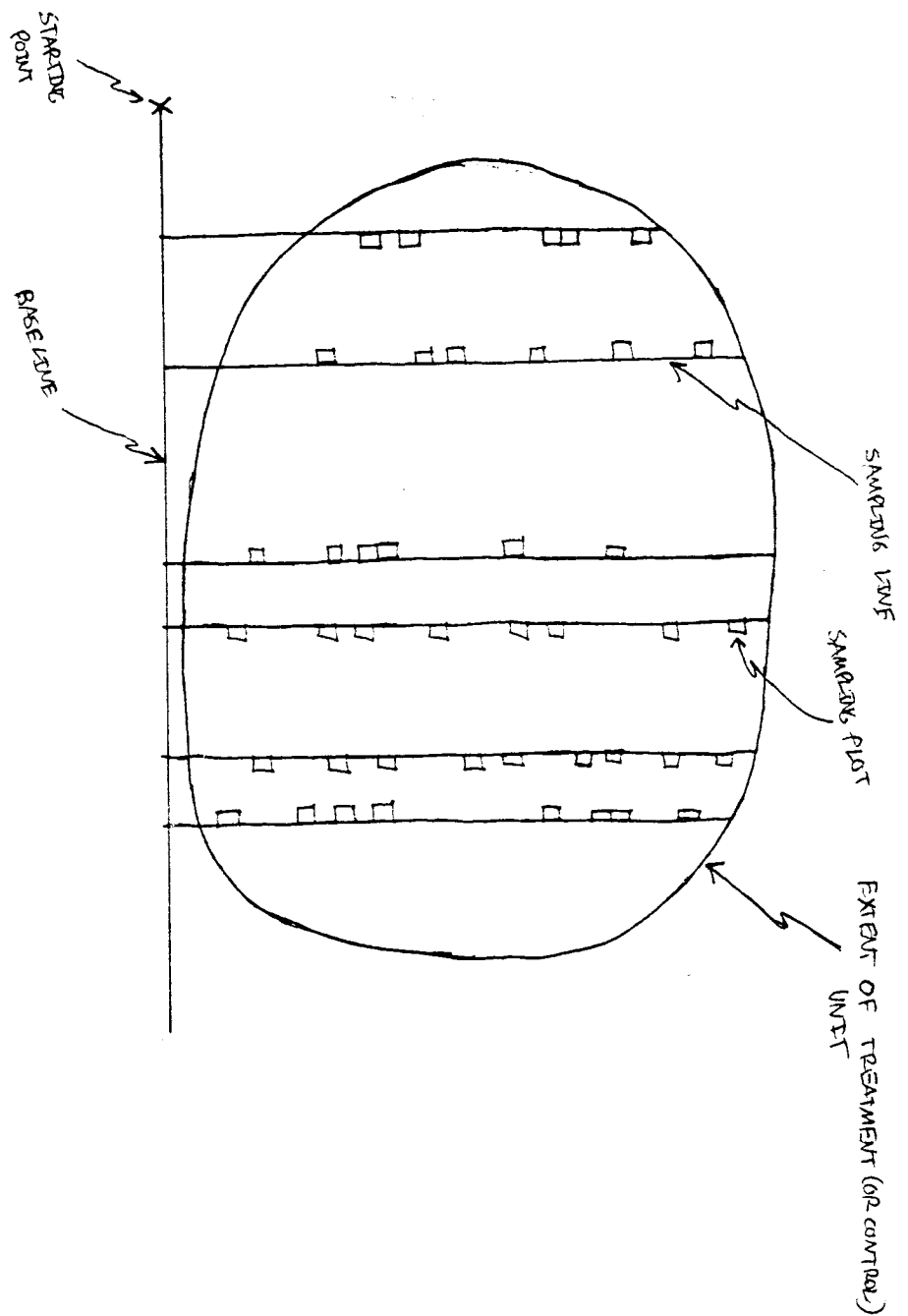
and position of the reference point in the frame shall be recorded so that the same site can be photographed year after year.

4. Photographs can be analyzed qualitatively or can be projected onto a grid to make quantitative measurements of vegetation cover within the frame over time.

Table 1 - Suggested Indicator Species

Acer rubrum  
Asclepias lanceolata  
Cladium mariscoides  
Hibiscus moscheutos  
Juncus roemerianus  
Kosteletzkya virginica  
Peltandra virginica  
Phragmites australis  
Pontederia cordata  
Sagittaria falcata  
Scirpus americanus  
Spartina cynosuroides  
Typha spp.

FIGURE 1 - DIAGRAM OF SAMPLING SYSTEM





## PLANT COMMUNITY MONITORING DATA SHEET

[illegible]

DATE \_\_\_\_\_ START TIME \_\_\_\_\_ END TIME \_\_\_\_\_ BASELINE \_\_\_\_\_

START POINT \_\_\_\_\_

SAMPLED BY \_\_\_\_\_

START THIS LINE AT \_\_\_\_\_ START PLOTS AT \_\_\_\_\_

PLOT NUMBER

[illegible]

## DATA SHEET INSTRUCTIONS

UNIT NAME/NUMBER: number and name of the monitoring unit  
LINE NUMBER: line number recorded on this sheet (each line gets its own data sheet)  
START/END TIME: time of day on 24-hour clock you started and ended data collection on this line  
BASELINE: compass bearing of baseline from starting point, include any other pertinent info on baseline  
START POINT: description of starting point location, include a compass bearing to one or more landmarks  
SAMPLED BY: put full name of everyone in your team for this line  
START LINE/PLOT AT: random numbers where you start your transect along baseline or start plot along this line, filled in for you  
SPECIES AND PLOTS: count stems for indicator species listed, put an asterisk under any plot in which stem count exceeds 100 (i.e., don't count beyond 100), fill in other species present in spaces provided and put check under plots that have them  
RUN OUT OF ROOM FOR SPECIES? use back of sheet: fold over bottom half such that bottom edge lines up with row of plot numbers then proceed from there  
RUN OUT OF PLOT NUMBERS? for lines that have more than 10 plots, use a second sheet and put a "1" in front of each plot number (i.e., "1" becomes "11", etc.), be sure to fill in blanks at top and write page numbers at top of pages

EXAMPLE

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EXAMPLE

SOUTHERN WATERSHEDS COMMON REEDGRASS CONTROL PROJECT  
PLANT COMMUNITY MONITORING DATA SHEET

UNIT NAME/NUMBER NORTH LAMP RIVER NATURAL AREA PRESERVE C2 ~~CONTROL~~ LINE NUMBER 3

DATE 8/1/93 START TIME 10:11 END TIME 10:35 BASELINE 11°, RUNS ALONG EASTERN EDGE OF UNIT

START POINT 84° FROM START POINT TO TALL ANTENNA; POINT IS NEAR DEAD TRUNK W/ PERSON IVY AT

SAMPLED BY ALBERT EINSTEIN, TYCO BRAHE, ISSAC NEWTON, MICHAEL COPERNICUS SE CORNER OF UNIT

START THIS LINE AT 37 START PLOTS AT 02, 06, 10, 11, 17, 22, 23, 28, 35, 37, 39

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SOUTHERN WATERSHEDS COMMON REEDGRASS CONTROL PROJECT  
PHOTOGRAPHY POINT DATA SHEET

UNIT NAME/NUMBER \_\_\_\_\_

PHOTO POINT LOCATION \_\_\_\_\_

REFERENCE POINT LOCATION \_\_\_\_\_

TRIPOD HEIGHT \_\_\_\_\_

| DATE | PHOTOGRAPHER | CAMERA, LENS | FILM TYPE | SHUTTER | F-STOP | ROLL, FRAME |
|------|--------------|--------------|-----------|---------|--------|-------------|
|      |              |              |           |         |        |             |
|      |              |              |           |         |        |             |
|      |              |              |           |         |        |             |
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